

Appl. No. 10/694,277
Amendment dated May 20, 2005
Reply to Office action of December 20, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 30 (Currently amended). A link layer gateway computer operable to communicate a data packet from a source host computer selected from one of a plurality of host computers coupled to a first network medium to a destination host computer selected from one of a plurality of host computers coupled to a second network medium, wherein:

a first network interface circuit enables connection of said link layer gateway computer to said first network medium; and

a second network interface circuit enables connection of said link layer gateway computer to said second network medium;

the link layer gateway computer has an assigned protocol address and a computer protocol handler;

responsive to either of the first and second network interface circuits receiving a data packet, the computer protocol handler evaluates a destination protocol address in the received data packet;

the computer protocol handler is responsive to the received data packet if the destination protocol address corresponds to the assigned address of the link layer gateway computer;

wherein the link layer gateway computer is programmed to execute a link layer protocol handler coupled to communicate with each of the first and second network interface circuits;

wherein, responsive to either of the first and second network interface circuits receiving a data packet comprising an address pairing communication, the link layer protocol handler evaluates a destination protocol address in the received data packet;

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wherein, responsive to determining that the destination protocol address does not correspond to the assigned address of the link layer gateway computer, the link layer protocol handler determines if a source host computer which transmitted the received data packet and the destination host computer designated by the destination protocol address are not on the same one of either the first network medium or the second network medium;

wherein:

responsive to the link layer protocol handler determining that the source host computer which transmitted the received data packet and the destination host computer designated by the destination protocol address are not on the same one of either the first network medium or the second network medium, the link layer protocol handler communicates a reply data packet to the source host computer which transmitted the received data packet;

the reply data packet comprises an address pairing; and

the address pairing comprises the destination protocol address and a hardware physical address corresponding to a selected one of the first network interface circuit or the second network interface circuit, wherein the selected network interface circuit is coupled to the same network medium as the source host computer which transmitted the received data packet.

31. (Currently amended) The link layer gateway computer of Claim 30 further including the link layer gateway computer operable to communicate [communicated] a data packet from a source host computer selected from one of said plurality of host computers coupled to said second network medium to a destination host computer selected from one of said plurality of host computers coupled to said first network medium.

32. (Previously presented) The link layer gateway computer of Claim 30, wherein one of said first network medium and said second network medium is an Ethernet network.

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33. (Previously presented) The link layer gateway computer of Claim 30, wherein one of said first network medium and said second network medium is a 1394 network.

34. (Previously presented) The link layer gateway computer of Claim 30, wherein one of said first network medium and said second network medium is an Ethernet network and the other of said first network medium and said second network medium is a 1394 network.

35. (Previously presented) The link layer gateway computer of Claim 30, wherein one of said first network medium and said second network medium is a local area network.

36. (Previously presented) The link layer gateway computer of Claim 30, wherein one of said first network medium and said second network medium is a wide area network.

37. (Previously presented) The link layer gateway computer of Claim 30, wherein at least one of said first network medium and said second network medium is a wireless network.

38. (Canceled).

39. (Canceled).

40. (Canceled).

41. (Canceled).

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42. (Currently amended) The link layer gateway computer of Claim 30 [41], wherein the link layer gateway computer is programmed to execute an application program coupled to communicate with the computer [IP] protocol handler.

43. (Currently amended) The link layer gateway computer of Claim 42, wherein:

[the link layer gateway computer is programmed to execute a link layer protocol handler coupled to communicate with each of the first and second network interface circuits;]

responsive to either of the first and second network interface circuits receiving a data packet comprising a protocol [an IP] communication, the link layer protocol handler evaluates a destination protocol [IP] address in the received data packet; and

responsive to determining that the destination protocol [IP] address does not correspond to the assigned address of the link layer gateway computer, the link layer protocol handler determines if a source host computer which transmitted the received data packet and the destination host computer designated by the destination protocol [IP] address are not on a same one of either the first network medium or the second network medium.

44. (Currently amended) The link layer gateway computer of Claim 43, wherein the [IP] computer protocol handler is independent of the link layer protocol handler.

45. (Currently amended) The link layer gateway computer of Claim 43, wherein, responsive to the link layer protocol handler determining that the source host computer which transmitted the received data packet and the destination host computer designated by the destination protocol [IP] address are not on the same one of either the first network medium or the second network medium, the link layer protocol communicates the received data packet from the network medium connected to the source host computer to the network medium connected to the destination host computer.

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46. (Previously presented) The link layer gateway computer of Claim 45, wherein:

the received data packet further comprises a hardware physical address;

the destination host computer comprises a network interface circuit coupled to one of either the first network medium or the second network medium;

the network interface circuit of the destination host computer is responsive to a destination hardware physical address; and

prior to communicating the received data packet from the network medium connected to the source host computer to the network medium connected to the destination host computer, the link layer protocol handler changes the hardware physical address to match the destination hardware physical address.

47. (Canceled).

48. (Canceled).

49. (Presently amended) The link layer gateway computer of Claim 30 [47], wherein:

responsive to the link layer protocol handler determining that the source host computer which transmitted the received data packet and the destination host computer designated by the destination protocol [IP] address are not on the same one of either the first network medium or the second network medium, the link layer protocol communicates an address pairing data packet to the destination host computer designated by the destination protocol [IP] address; and

the address pairing data packet comprises a source protocol [IP] address corresponding to the source host computer which transmitted the received data packet and a hardware physical address corresponding to a selected one of the first network interface circuit or the second network interface circuit, wherein the selected network interface circuit is coupled to the same network medium as the destination host computer.

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50. (Presently amended) The link layer gateway computer of Claim 30 [47], wherein:

responsive to the link layer protocol handler determining that the source host computer which transmitted the received data packet and the destination host computer designated by the destination protocol [IP] address are not on the same one of either the first network medium or the second network medium, the link layer protocol communicates a reply data packet to the source host computer which transmitted the received data packet;

the reply data packet comprises an address pairing;

the address pairing comprises the destination protocol [IP] address and a hardware physical address corresponding to a selected one of the first network interface circuit or the second network interface circuit, wherein the selected network interface circuit is coupled to the same network medium as the source host computer which transmitted the received data packet;

responsive to the link layer protocol handler determining that the source host computer which transmitted the received data packet and the destination host computer designated by the destination protocol [IP] address are not on the same one of either the first network medium or the second network medium, the link layer protocol communicates an address pairing data packet to the destination host computer designated by the destination IP address; and

the address pairing data packet comprises a source protocol [IP] address corresponding to the source host computer which transmitted the received data packet and a hardware physical address corresponding to a selected one of the first network interface circuit or the second network interface circuit, wherein the selected network interface circuit is coupled to the same network medium as the destination host computer.

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51. (Presently amended) A computer, comprising:

a first protocol handler coupling a first network interface circuit to an application program, wherein said first network interface circuit enables connection of said computer to a first network medium;

a second protocol handler coupling a second network interface circuit to an application program, wherein said second network interface circuit enables connection of said computer to a second network medium; and

a link layer protocol coupling said first protocol handler and said first network interface circuit to said second protocol handler and said second network interface circuit;

wherein:

said computer has an assigned protocol address;

responsive to either of the first and second network interface circuits receiving a data packet, one of the first and second protocol handlers evaluates a destination protocol address in the received data packet;

one of the first and second protocol handlers is responsive to the received data packet if the destination protocol address corresponds to the assigned address of the computer;

the computer is programmed to execute the link layer protocol coupled to communicate with each of the first and second network interface circuits;

responsive to either of the first and second network interface circuits receiving a data packet comprising an address pairing communication, the link layer protocol evaluates a destination protocol address in the received data packet; and

responsive to determining that the destination protocol address does not correspond to the assigned address of the computer, the link layer protocol handler determines if a source host computer which transmitted the received data packet and the destination host computer designated by the destination protocol address are not on the same one of either the first network medium or the second network medium;

responsive to the link layer protocol determining that the source host computer which transmitted the received data packet and the destination host computer

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designated by the destination protocol address are not on the same one of either the first network medium or the second network medium, the link layer protocol communicates a reply data packet to the source host computer which transmitted the received data packet;
the reply data packet comprises an address pairing; and
the address pairing comprises the destination protocol address and a hardware physical address corresponding to a selected one of the first network interface circuit or the second network interface circuit, wherein the selected network interface circuit is coupled to the same network medium as the source host computer which transmitted the received data packet.

52. (Previously presented) The computer of Claim 51, wherein said link layer protocol is at the same hierarchical level as said first protocol handler and said second protocol handler.

53. (Previously presented) The computer of Claim 51, wherein said link layer protocol is not part of an operating system of said computer.

54. (Previously presented) The computer of Claim 51, wherein said link layer protocol is not part of the operating system of said computer and, therefore, executes independently of operating system protocol(s).

55. (Previously presented) The computer of Claim 53, wherein said link layer protocol detects whether a data packet received on one of said first network interface circuit and said second interface circuit is intended for a computer coupled to the other of said first network interface circuit and said second interface circuit.

56. (Presently amended) The computer of Claim 55, wherein said link layer protocol, in response to determining that a data packet [packed] received on one of said first network interface and said second interface circuit is intended for a computer coupled to the

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other of said first network interface circuit and said second interface circuit, directs said data packet to said computer coupled to the other of said first network interface circuit and said second interface circuit.

57. (Previously presented) The computer of Claim 56, wherein said data packet does not reach any application program(s) of said computer.

58. (Previously presented) The computer of Claim 51, wherein said first network interface is bi-directionally coupled to said first protocol handler.

59. (Previously presented) The computer of Claim 51, wherein said first network interface is designed to receive a network medium different from the network medium to be received by said second network interface.

60. (Previously presented) The computer of Claim 51, wherein said second network interface is bi-directionally coupled to said second protocol handler.

61. (Previously presented) The computer of Claim 51, wherein one of said first network interface and said second network interface enables connection to an Ethernet network.

62. (Previously presented) The computer of Claim 51, wherein the other of said first network interface and said second network interface enables connection to a 1394 network.

63. (Previously presented) The computer of Claim 51, wherein one of said first network interface and said second network interface enables connection to an Ethernet network and the other of said first network interface and said second network interface enables connection to a 1394 network.

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64. (Canceled).

65. (Canceled).

66. (Presently amended) The computer of Claim 51 [65], wherein said computer is programmed to execute an application program coupled to communicate with one of the first and second [IP] protocol handlers [handler].

67. (Presently amended) The computer of Claim 66, wherein:
said computer is programmed to execute the [a] link layer protocol [handler] coupled to communicate with each of the first and second network interface circuits;

responsive to either of the first and second network interface circuits receiving a data packet comprising a protocol [an IP] communication, the link layer protocol [handler] evaluates a destination protocol [IP] address in the received data packet; and

responsive to determining that the destination protocol [IP] address does not correspond to the assigned address of the computer, the link layer protocol [handler] determines if a source host computer which transmitted the received data packet and the destination host computer designated by the destination protocol [IP] address are not on either the first network medium or the second network medium.

68. (Presently amended) The computer of Claim 67, wherein each of the first and second protocol handlers [IP protocol handler] is independent of the link layer protocol [handler].

69. (Presently amended) The computer of Claim 67, wherein, responsive to the link layer protocol [handler] determining that the source host computer which transmitted the received data packet and the destination host computer designated by the destination protocol [IP] address are not the same one of either the first network medium or the second

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network medium, the link layer protocol communicates the received data packet from the network medium connected to the source host computer to the network medium connected to the destination host computer.

70. (Presently amended) The computer of Claim 69, wherein:
the received data packet further comprises a hardware physical address;
the destination host computer comprises a network interface circuit coupled to one of either the first network medium or the second network medium;
the network interface circuit of the destination host computer is responsive to a destination hardware physical address; and
prior to communicating the received data packet from the network medium connected to the source host computer to the network medium connected to the destination host computer, the link layer protocol [handler] changes the hardware physical address to match the destination hardware physical address.

71. (Canceled).

72. (Canceled).

73. (Presently amended) The computer of Claim 50 [71], wherein:
responsive to the link layer protocol [handler] determining that the source host computer which transmitted the received data packet and the destination host computer designated by the destination protocol [IP] address are not on the same one of either the first network medium or the second network medium, the link layer protocol communicates an address pairing data packet to the destination host computer designated by the destination protocol [IP] address; and
the address pairing data packet comprises a source protocol [IP] address corresponding to the source host computer which transmitted the received data packet and a hardware physical address corresponding to a selected one of the first network interface

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circuit or the second network interface circuit, wherein the selected network interface circuit is coupled to the same network medium as the destination host computer.

74. (Presently amended) The computer of Claim 50 [71], wherein:

responsive to the link layer protocol [handler] determining that the source host computer which transmitted the received data packet and the destination host computer designated by the destination protocol [IP] address are not on the same one of either the first network medium or the second network medium, the link layer protocol communicates a reply data packet to the source host computer which transmitted the received data packet;

the reply data packet comprises an address pairing;

the address pairing comprises the destination protocol [IP] address and a hardware physical address corresponding to a selected one of the first network interface circuit or the second network interface circuit, wherein the selected network interface circuit is coupled to the same network medium as the source host computer which transmitted the received data packet;

responsive to the link layer protocol [handler] determining that the source host computer which transmitted the received data packet and the destination host computer designated by the destination protocol [IP] address are not on the same one of either the first network medium or the second network medium, the link layer protocol communicates an address pairing data packet to the destination host computer designated by the destination protocol [IP] address; and

the address pairing data packet comprises a source protocol [IP] address corresponding to the source host computer which transmitted the received data packet and a hardware physical address corresponding to a selected one of the first network interface circuit or the second network interface circuit, wherein the selected network interface circuit is coupled to the same network medium as the destination host computer.